

## Different strategies to estimate genetic parameters for the rank of Santa Ines sheep in agricultural-shows

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Agricultural fairs seek to evaluate desirable features for the breed standards and contribute to the production based on morphological aspects of the animals. However, methods applied on animal's judgment are subjective; therefore, genetic inheritance for the rank of the animals in agricultural shows remains unknown. Most used models for estimating variance components in animal breeding requires a normal distribution assumption for the variables, therefore, mathematical transformations of rankings may be required. The aim of this study was to compare different strategies to use the ranking of Santa Ines sheep in agricultural shows as performance information to estimate genetic parameters for this trait. A total of 3,092 records for rank in judgment championships of the Santa Ines breed that occurred between the years of 2012 and 2014 were used. The relationship matrix was composed by 4,069 animals. Ranking was evaluated using five strategies: use of the absolute ranking in a linear model (ARL), by threshold model (ART), an empirical normal score varying between 1 and 5 for the rank (NS), use of the Blom method (Blom, 1958) for normalization of the rank (BLOM) and square root transformation (SR), in which  $SR = 15 - (\text{rank} + (11 - \text{weighting factor}))^{0.5}$ . A total of 11 weighting factors were used based on the competitions level according to the Brazilian Association of Santa Inês (ABSI) regulation, regarding with the total of the animals in the event, number of sheep exhibitors and number of states represented. Variance components were estimated by Bayesian analysis using the Gibbs Sampler and fitting a linear model for ARL, NS, BLOM and SR and a threshold model for ART. The posteriori averages for the genetic parameters were similar for all strategies, varying between 0.09 - 0.14 for heritability and between 0.15 - 0.33 for repeatability, however, lower values were found in SR strategy. The highest density probability intervals (95%) suggest that normalization procedures in general did not affect the genetic parameters estimation. The ranking of animals in judgment championships shows a low additive genetic variance.

**Key Words:** animal judgment, categorical trait, heritability, repeatability